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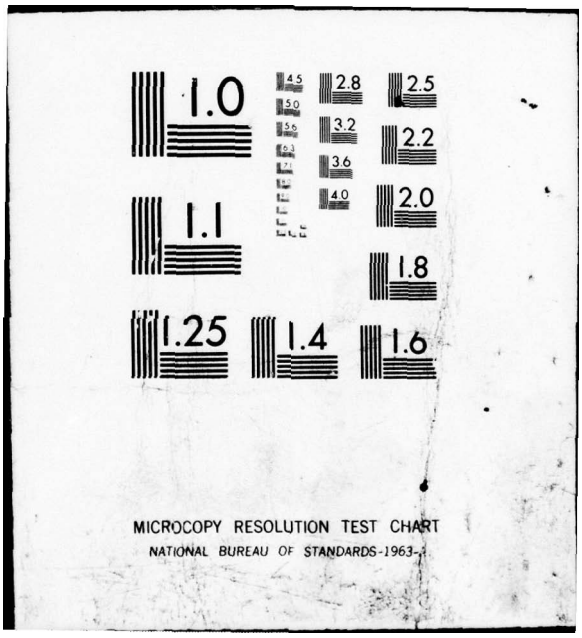
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USERS GUIDE TO THE EARLY WARNING AND MONITORING SYSTEM

DECISIONS AND DESIGNS INCORPORATED

Thomas R. Davies
Brenda D. Bell

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USERS GUIDE TO THE EARLY WARNING AND MONITORING SYSTEM

by

Thomas R. Davies and Brenda D. Bell

Sponsored by

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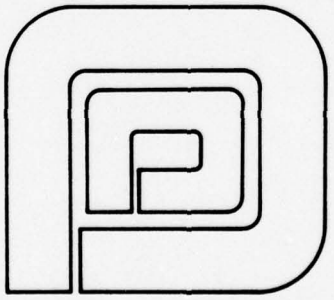

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20. ABSTRACT *(Continue on reverse side if necessary and identify by block number)*

The Early Warning and Monitoring System (EWAMS) is being developed, tested and transferred at the direction of the Cybernetics Technology Office of the Defense Advanced Research Projects Agency (DARPA/CTO). The EWAMS is being developed to assist the intelligence community by providing them with an interactive computer-based system of political, economic, and domestic indicators for daily monitoring of international and intranational affairs and for warning of crisis and conflict.

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The EWAMS has been designed to fulfill three basic needs of potential users. First, it can be used as an information retrieval system. The EWAMS allows users to retrieve data on the historical, political actions taken by countries as far back as 1966. Second, the system can be used as a monitoring system. Users can monitor the entire international political environment on a daily basis. Third, the EWAMS can be used as a warning system. It allows users to receive numerical assessments of the probability of a crisis on a monthly basis.

The EWAMS is conprised of several independent computer programs. This users guide contains an overview of these programs and a description of their operation. The EWAMS program is designed to be implemented on a Tektronix 4051 in interaction with a PDP/11-70 computer.

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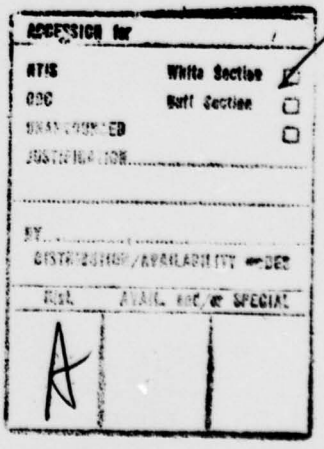

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1.0 INTRODUCTION

The Early Warning and Monitoring System (EWAMS) is being developed, tested, and transferred at the direction of the Cybernetics Technology Office of the Defense Advanced Research Projects Agency (DARPA/CTO). The EWAMS is being developed to assist the intelligence community by providing them with an interactive computer-based system of political, economic, and domestic indicators for daily monitoring of international and intranational affairs and for warning of crisis and conflict.

The EWAMS has been designed to fulfill three basic needs of potential users. First, it can be used as an information retrieval system. The EWAMS allows users to retrieve data on the historical, political actions taken by countries as far back as 1966. Second, the system can be used as a monitoring system. Users can monitor the entire international political environment on a daily basis. Third, the EWAMS can be used as a warning system. It allows users to receive numerical assessments of the probability of a crisis on a monthly basis.

1.1 The DARPA Crisis Management Program (CMP)[1]

The Early Warning and Monitoring System is being developed as one of two lead projects in DARPA's Crisis Management Program, the objective of which is to develop, test, and transfer technology in the following areas:

[1] In the interests of standardization of products from the many CMP projects, this section borrows liberally from CACI, Incorporated-Federal, "Executive Aids for Crisis Management: Sample Output." Arlington, VA: CACI, Incorporated, November, 1977.

1. Computer-based early warning and monitoring systems;

2. Computer-based executive aids for crisis management;

3. New quantitative methods for advanced warning, monitoring, and management.

From 1974-1976 DARPA-sponsored basic research efforts designed to build the base required for effective technology development in the social sciences. By late 1976 progress was such that the Crisis Management Program had two major thrusts--crisis management and crisis forecasting. Research results in these areas were then integrated with state-of-the-art computer technology to yield user-oriented, computer-based aids for:

- o assisting alert centers in identifying the indicator and warning patterns which signal the onset of crisis and monitoring "normal" patterns on a daily basis;
- o developing option-generation and action-selection aids to assist crisis managers after a crisis had begun.

1.2 The Early Warning and Monitoring Project

The Early Warning and Monitoring Project is contributing two types of research products to the Crisis Management Program:

- o integration of past and on-going I&W-relevant research performed in both the academic and policy communities and further testing of this research to enhance its utility to the I&W community.

This research is presented in two forms:

- o an interactive, computer-based, user-oriented Early Warning and Monitoring System which allows the analyst to track international political

indicators on a global, regional, country-pair and single-country basis and which will eventually include economic and domestic indicators;

- o reports on the testing of a variety of political and economic indicators, software development, integration of computer-based political and military I&W systems, and modifications to the Early Warning and Monitoring System in response to user needs.

The conceptual and analytical integration of I&W-relevant research began in early 1976 and included the synthesizing of both research results and data sets to begin giving substance to the design for a fully integrated Crisis Early Warning and Monitoring System.[2] Software development of the first-stage system began in mid-1976 with a demonstration system comprised of four historical crisis cases and ten years of selected data on an interactive graphics terminal. The demonstration system contained data for nine countries with quantitative international political indicators aggregated by month, quarter, and year.

The combination of input from potential users who viewed this demonstration system, and intensive research the project performed with the system, resulted in a new "real-time" version in early 1977. This demonstration system is front-ended with Joint Chiefs of Staff (JCS) regions and allows the user to access almost thirteen years of data for all countries in the world; to track combinations of country-pairs, regions, and the world with quantitative international political indicators; and to create his own region. The remainder of 1977 was devoted to rigorous testing of extant indicators and forecasting methods, development of new ones,

[2] See Stephen J. Andriole, Progress Report on the Development of an Integrated Crisis Warning System (Technical Report 76-19). McLean, VA: Decisions and Designs, Incorporated, December, 1976.

extensive interaction with potential users, especially those of DIA/NMIC (Defense Intelligence Agency/National Military Intelligence Center), and exploration of possible amalgamation of the Early Warning and Monitoring System with military indicator systems. All of this is, of course, on-going.

In late 1977, the project moved from reliance on a commercial time-sharing service to DARPA/CTO's Demonstration and Development Facility (DDF) where extensive changes to the Early Warning and Monitoring System are now in progress. As always, we are continuing to work closely with other CMP contractors to give substance to components of the design for the fully integrated system.

1.3 The Approach to Early Warning and Monitoring

The Early Warning and Monitoring System project initially addressed several problems.

- the development, evaluation, and improvement of procedures for warning and monitoring of international security crises;
- the identification and observation of quantitative political indicators for crisis warning; and
- the integration of a variety of indicators and methods into an interactive, user-oriented, computer-based crisis warning system.

Research has resulted in significant progress on many aspects of these general problems.[3] Furthermore, as is usually the case, progress has revealed a new set of corresponding problems including:

- supplementing the warning system with monitoring and retrieval systems;

[3]For a description of this progress see Judith Ayres Daly and Thomas R. Davies, Early Warning and Monitoring System: A Progress Report (Technical Report 78-17-39). McLean, VA: Decisions and Designs, Incorporated, July, 1978.

- integrating the hardware, software, and methodologies of extant computer-based I&W systems;
- tailoring the EWAMS to user needs; and
- implementing an efficient and effective transfer to the user community.

1.4 Program Structure

The EWAMS is comprised of several independent computer programs.[4] An overview of these programs can be found in Section 3.0, and a description of their operation is included in Section 4.0.

As shown in Figure 1, there are seven main components:

- Initial Input
  - Enter initial information such as actors, flow, and time parameters
- Probabilistic Forecasts
  - Monthly estimates of crisis probabilities
- Primary Menu
  - Selection of system options
- QCS1 (Quality Control System 1)
  - Change initial input information
- Tables
  - Tabular, numerical display, and analysis of the political indicators
- Plots
  - Graphic analysis and display of the political indicators
- Text
  - Retrieval and display of textual data

[4] Software documentation can be found in J.F. Wittmeyer, III, Software Design for an Interactive Crisis Early Warning Prototype System (Technical Report 76-20). McLean, VA: Decisions and Designs, Inc., December, 1976; J.F. Wittmeyer, "Support and Test Programs" (Early Warning and Monitoring Project Research Memorandum #5). McLean, VA: Decisions and Designs, Inc., January, 1977; and B.D. Bell, "Early Warning and Monitoring System Software" (Early Warning and Monitoring Project Research Memorandum #21). McLean, VA: Decisions and Designs, Inc., February, 1978.

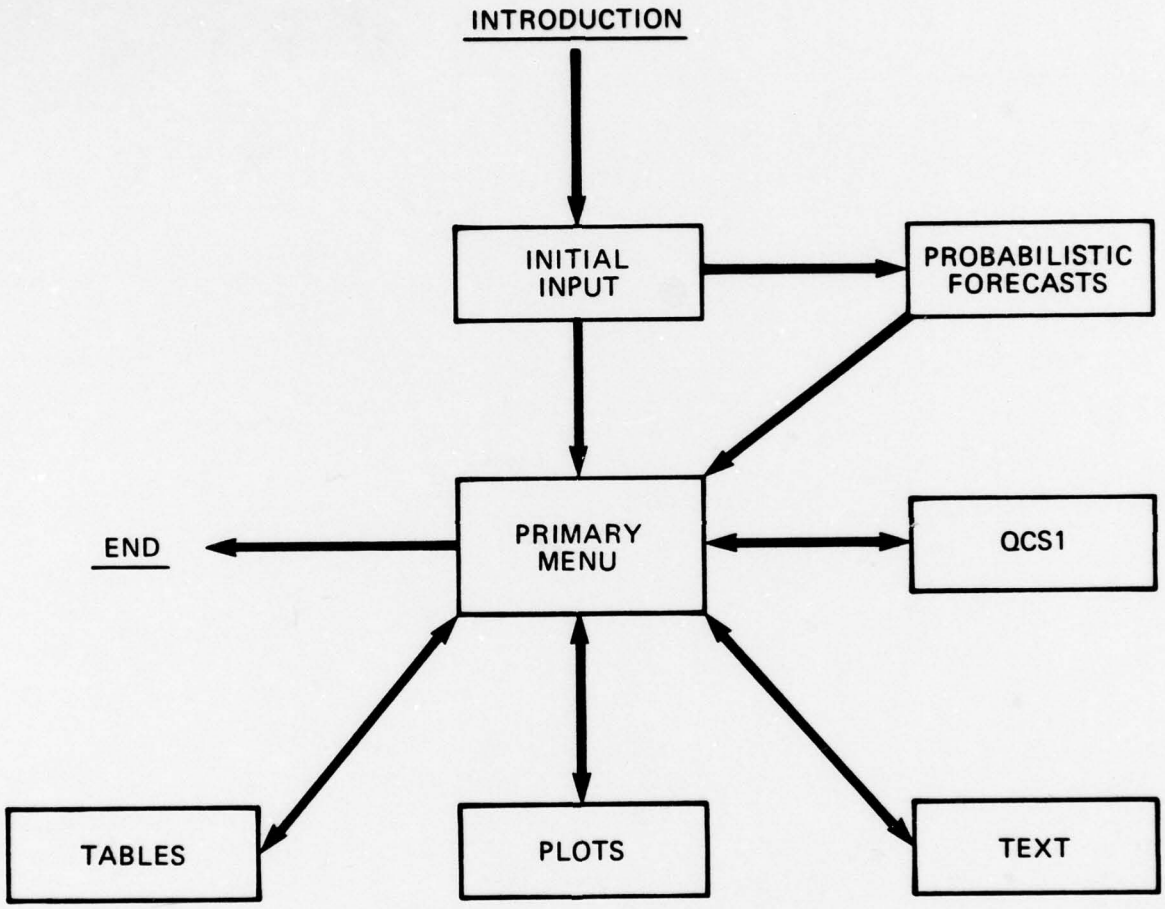

Figure 1

THE EARLY WARNING AND MONITORING SYSTEM

2.0 THE TEKTRONIX 4051 TERMINAL

Introduction

The Early Warning and Monitoring System (EWAMS) program is designed to be implemented on a Tektronix 4051 in interaction with a PDP/11-70 minicomputer. The EWAMS now resides at the Development and Demonstration Facility (DDF) of the Defense Advanced Research Projects Agency's Cybernetics Technology Office.[1]

2.1 Accessing the EWAMS Program

When the user is working at a Tektronix 4051 terminal, he is connected to the PDP/11-70 computer through a phone line. Thus, each user is "sharing time" with one computer.

A series of steps must be executed in order to activate the terminal and access the EWAMS. In general, the user will have to

- turn on the power,
- call the DDF operating system,
- type the user number, and
- type the password.

This procedure is called logging in.[2] The login procedures

---

[1]For further details on the DDF see, J.F. Wittmeyer, III, J.J. Allen, Jr., R.A. Winter, and C.E. Herdt, Cybernetics Technology Office Demonstration and Development Facility (CTO/DDF): Overview and FY79 Plan, (Technical Report CCA-78-12). Cambridge, MA: Computer Corporation of America, October, 1978.

[2]For a more detailed description of how to get started see K. Thompson and D.M. Ritchie, "UNIX Programmer's Manual," Sixth Edition, Bell Telephone Laboratories, Inc., May, 1975. The user can also telephone the system administrator at the DDF for assistance by calling (703)243-8664.

have been successfully executed when the system responds with a '%'. Having logged in, the user can then proceed to the EWAMS by typing in the name of the program.

2.2 Operation of the Tektronix 4051 terminal

The material presented here is not intended to cover every detail of the Tektronix 4051. Rather, its purpose is to introduce the user to the Tektronix 4051 microprocessor and its basic operating procedures.[3]

2.2.1 The keyboard - The primary input device for the Tektronix 4051 terminal is the keyboard (Figure 2). Each time a key is pressed, the character is shown on the display screen. Thus, the keyboard is used to input information and to control a program that is in progress.

The arrangement of the keyboard is similar to that of a typewriter keyboard. The letters and numbers are in standard positions along with several special characters. There is also a numeric pad, located to the right of the main keyboard, that resembles a calculator keyboard. This latter group of keys can be used to enter numeric data. Many of the characters repeat their function if the key is held down for more than a second. Some of the more useful keys are:

RETURN	This key should be pressed at the end of each user response. When this key is pressed, the display cursor returns to the left-nand margin and skips down one line. The previous line statement is then transmitted to the computer and executed. The program will not respond to the input until the return key is pressed.

[3]More detailed information can be obtained from the "4051 Graphic System Operator's Manual" (Tektronix, Inc., 1976) which is used as the basis for this section.

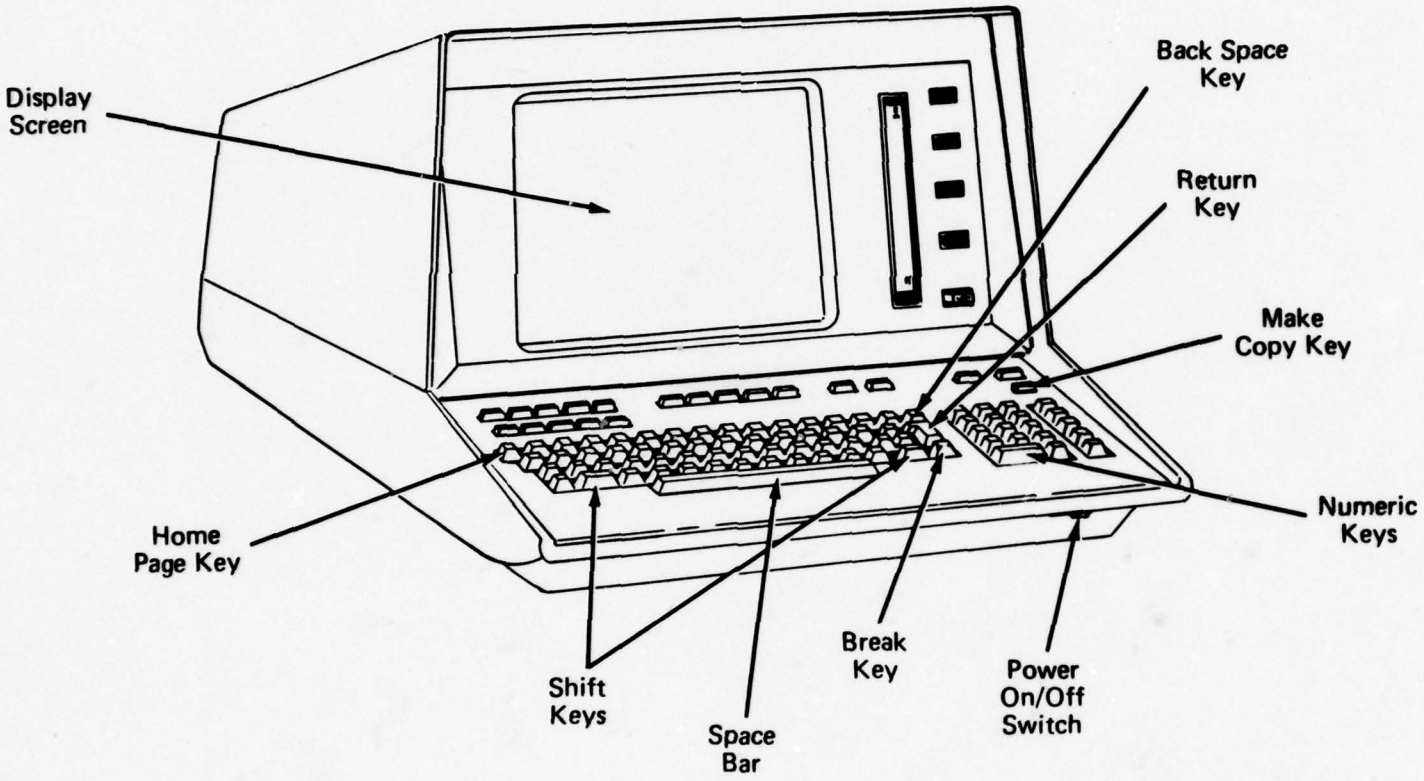

Figure 2

THE TEKTRONIX 4051

SPACE BAR	Pressing the space bar moves tne cursor one space to the right. It is used to type spaces and blanks.
SHIFT	This key is used to type the upper-case positions on the keys. Letters are printed in lower case unless this key is pressed simultaneously with the letter.
BACKSPACE	Pressing the backspace key moves the cursor one space to the left. It does not delete the previous character.
HOME PAGE	This key clears the entire display screen and returns the display cursor to the upper left corner of the screen.
BREAK	This key is used to interrupt a program.

There are also several front panel lights which indicate the following status conditions:

BREAK	The program has been interrupted.
I/O	An I/O (input/output) operation is in progress.
POWER	Power is being applied to the system.

2.2.2 The display - The Tektronix 4051 has a display unit on which characters are imprinted. The display unit is sometimes referred to as a cathode ray screen. The display allows the user to monitor the communications that take place between him and the system.

The blinking rectangular display cursor, visible on the screen, indicates the location of the next keyboard character to be typed in. Sometimes it is necessary to press the HOME PAGE key to clear the screen for the cursor to become visible. The cursor will move around the screen during the program.

The display operates at different intensity levels. During normal intensity levels the display will remain visible on the screen. If the system is active--for example, when information is being typed in--the display will continue to operate at the normal intensity level. However, if all activity stops for about 90 seconds, the display will go to a reduced intensity level. At this level the displayed information is dimmed and the cursor disappears. To re-establish normal intensity, the user can press the SHIFT key.

2.2.3 Power switch - To power on the Tektronix 4051, it is necessary to locate the power switch under the right-front edge of the keyboard. It is a rocker-type switch that provides the power for the terminal. To turn it on, the user must press the right side of the switch. To power off the terminal, the user must press the left side of the switch.

2.2.4 Hard copy generation - The user can make a permanent copy of the display on the terminal screen when a hard copy unit, such as a Tektronix 4631, is attached. This may be done at any time since it does not affect the status of the program. To make a paper copy, the user must press the MAKE COPY key on the Tektronix 4051 keyboard or the COPY key on the hard copy unit.

2.3 Potential Problems

Many of the EWAMS components contain error diagnostic checks, designed to check for errors in user input that could abort the program. When an error is detected, the user will receive a message indicating the source of the error. The question or request will then be repeated, allowing the user to enter a new response.

2.3.1 Correcting typing mistakes - The terminal has a special character which executes backspace deletes. This

character will delete the previous character typed. However, since deletion occurs within the computer, the deleted character will remain visible on the display screen. If, for example, the user types in the wrong character when entering a response and wants to correct the error before pressing the RETURN key, he can use the backspace delete character. To erase or delete a character press SHIFT and a '#' simultaneously. For continuous deletions this process must be repeated. Once all the errors have been deleted, the correct symbols can be entered.

3.0 DESCRIPTION OF USER OPTIONS

Introduction

This section is designed to provide the user with an overview of the many options within the Early Warning and Monitoring System (EWAMS). After reading this section, the user should have the foundation necessary to follow the detailed examples included in Section 4.0.

Selection of a particular option is accomplished by entering the appropriate responses to the questions and requests. The responses considered appropriate will vary depending on where the user is located in the execution of the program. Upon entering a response, either the operation will be performed directly or another request will be displayed.

3.1 Initial Input

Once the introductory credits have been given, a series of displays will appear on the screen one at a time. This initial set of questions and requests will allow the user to specify the information needed to execute the subsequent analyses.

When the display appears, the user must enter the appropriate information for his particular analysis. When the user presses the RETURN key, a new display will request additional information. This process will be repeated until the program has all the information needed to execute the initial analyses.

Five types of information must be specified prior to execution of the analyses: actor type, actor name, activity flow, time increment, and time parameters.

Actor Type

At this stage the user must select the type of actor to be monitored. The system currently recognizes both countries and regions. Regional actors include Joint Chiefs of Staff (JCS) regions as well as the world in its entirety. The regional actor option also allows the user to build his own special purpose region which can be saved for future analyses.

```
Are your actors:
    1. Countries
    2. JCS regions
    3. Both
```

Actor Name

The system allows the user to select from a list of 183 countries (see Appendix A). The country actors include both governmental and non-governmental ones. Three-character alphabetical codes, assigned to the 183 country actors, are used for identification purposes.

The user can request a listing of all countries and multilateral groups within a specified region.

Each regional actor also has a corresponding three-character alphabetical code that is used for identification purposes.

```
Please select two countries(usa,usr):

                    *** REGIONAL OPTIONS ***

JCS REGIONS

1.  North America (NAM)
2.  Central and South America (CSA)
3.  Western Europe--Mediterannean Atlantic (WEM)
4.  Eastern Europe--Soviet Union (ESU)
5.  Middle East and North Africa (MEA)
6.  East Asia and Pacific (EAP)
7.  South Asia and Sub-Saharan Africa (SAS)
8.  World (WOR)
9.  Special Purpose Region (SPR)

Do you want a list of actors in a region(y/n)?
```

Activity Flow

This option allows the user to specify the direction of the political event/interactions to be monitored. The one-way flow options differ on the basis of which actor is to be considered the initiator and which actor is to be the target. Initiators and targets are identified by the direction of the arrows. If the user selected a two-way activity flow all political events exchanged between the actors would be examined.

```
Specify activity flow:
    0. one way (usa >>> usr)
    1. one way (usa <<< usr)
    2. two way (usa <-> usr)
```

Time Increment

The user can choose among three different calendar time intervals: months, quarters, or years.

```
Select time increment:
    1. monthly
    2. quarterly
    3. yearly
```

Time Parameter

The time parameters allow the user to specify beginning and ending dates for the analysis. The first two numeric characters of the four digit number indicate the year. The second two numeric characters indicate the appropriate month. The time parameter cannot include more than 36 time intervals.

```
Set time parameters(7501-7712):
```

3.2 Probabilistic Forecasts

Once the initial information has been received, the system will then go to processing. During the processing period the program searches the database for the appropriate data and carries out all the required computations. When the system is finished processing, it will display the total number of events found.

If the user had chosen monthly time increments, he would then be given the option of examining the probabilistic forecasts. The probabilistic forecasts are derived from a series of retrospective tests carried out on the database examining the fluctuations in a conflict indicator during historical crises.

To receive a tabular display of the monthly crisis probabilities the user simply enters 'y' for yes. A 'n', which is a no response, will instruct the system to proceed to the primary menu.

Do you desire 30 day probablistic forecasts(y/n):

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3.3 Primary Menu

The primary menu is the central component of the EWAMS for it allows the user to directly access all other system components. Furthermore, the system always returns to the primary menu when the analytic options have been fully executed.

This is the principle menu of options available within the system. To execute any given option the user must type the appropriate name. For example, if the user wanted to select the plot option, he would type the word 'plots'. Each of these five primary options is described in the following sections.

SYSTEM OPTIONS :

tables	-	(tabular output)
plots	-	(graphical output)
text	-	(textual output)
qcsl	-	(change input parameters)
end	-	(terminate execution)

Any of these commands typed after the "%" will cause execution of the chosen function.

%

3.4 Tables

The table option allows the user to receive numerical readings taken on the political indicators in a tabular format. If the tables option on the primary menu is selected, the system will automatically display numerical readings for all five political indicators. The tables are structured and labeled on the basis of the initial input.

Event Frequencies

To receive a tabular display of the event frequencies for the ten cooperative event types and the twelve conflictual ones the user must enter 'y' for yes. A 'n', which is a no response, will instruct the system to return to the primary menu.

Do you want event frequencies(y/n)?

3.5 Plots

The plot option permits the user to receive many different types of graphic output from the system. The user can specify the type of graphic display as well as the number of displays. The graphs are scaled and labeled automatically on the basis of the initial input.

Multiplots

Selection of this option allows the user to examine a multiplot display of the political indicators. A multiplot simply refers to a joint, simultaneous display of several line plots all on one set of axes.

POLITICAL INDICATORS

	Total Activity	Coop Activity	Conflict Activity	Tension Level	Uncert Level
Raw Data	1	3	5	7	9
Z-Score	2	4	6	8	0

Do you want more than one plot per graph (y or n)

If the user chose to examine a multiplot display he would then be asked to pick among several options. He would indicate his choice by entering either '1', '2', '3', or '4'. Option '3', for example, would result in a multiplot display of the tension and uncertainty indicators using the raw data.

You have these choices:
1 = graphs 1,3 + 5
2 = graphs 2,4 + 6
3 = graphs 7 + 9
4 = graphs 8 + 10
Please pick one :

Type of Graphic Display

If the user did not elect to examine a multiplot display of the political indicators he would then be asked to specify the type of graphic display. The response 'g' produces line plots and the 'b' response results in bar charts.

Do you want graphs or bar-charts (g or b)

Number of Graphic Displays

By entering a number between one and six the user can specify the number of line plots or bar-charts to be displayed separately on one screen.

How many charts do you want (1-6)

Indicator Identification

To identify which political indicators are to be displayed the user must enter a series of numbers between one and ten. Each number should correspond to a different political indicator as indicated in the plot menu. The total number of entries should equal the number of graphic displays specified in the previous response.

Please type in the 2 chart numbers you would like displayed in the form (1,2,3 ... 6)

Probabilities

This option allows the user to receive probability plots in addition to indicator plots. This question will only be displayed when the user has chosen to examine political indicators one through five and the total number of plots requested is two or less.

Do you want probabilities (y or n)

Plot Magnification

After displaying the initial plots the system allows the user to magnify a specific graph. To blowup or magnify a specific plot the user must enter the number that corresponds to the political indicator and press RETURN. There is no limitation on the number of times this process can be repeated.

3.6 Text

The text option allows the user to receive textual output from the EWAMS. Associated with each political event in the database is a concise, narrative statement. The statement summarizes and describes the context surrounding the event. For example, references are often made to public officials involved in the event and to important underlying issues. Execution of the text option causes the system to search for and display the specified textual information.

Event Type(s)

The user can request that the system retrieve and display the textual data for any combination of event types. If the user entered the number '2', for example, he would receive textual data for all conflictual events exchanged.

```
Event Types

Cooperative Events:
   01 Yield (YLD)              06 Grant (GRNT)
   02 Comment (CMNT)           07 Reward (REWD)
   03 Consult (CNSL)           08 Agree (AGRE)
   04 Approve (APPR)           09 Request (REQST)
   05 Promise (PRMS)           10 Propose (PROP)

Conflictual Events:
   11 Reject (RJCT)            17 Threat (THRT)
   12 Accuse (ACUS)            18 Demonstrate (DEMO)
   13 Protest (PROT)           19 Reduce (RDUC)
   14 Deny (DENY)              20 Expel (EXPL)
   15 Demand (DMND)            21 Seize (SEIZ)
   16 Warn (WARN)              22 Force (FRCE)

Please Specify Event Types:
   1. All cooperative events
   2. All conflictual events
   3. All events
   4. Combination
```

If the user had selected option '4', a combination of event types, this next display would allow him to enter the individual event types. This capability is particularly valuable to the user who wants to carry out very detailed historical searches.

```
Enter event types: (e.g. 01,02,21..)
```

Dates

At this point the user must enter new beginning and ending dates. The format of this input is identical to that used to specify the time parameters. However, this new set of dates is valid only for the text option. The original time parameters will be employed if the user returns to either the 'plots' or 'tables' options.

```
Specify dates: (e.g. 6601-6604)
```

3.7 QCS1 (Quality Control System 1)

The qcs1 option allows the user to change the initial input information. The option also permits the user to review the current status of the input parameters.

Change Inputs

The selection of the 'qcs1' option presents the user with a number of alternatives for changing the initial input information. The menu permits the user to alter either the actors, the flow, the time parameters, or all input parameters. Once the new information is entered the system will automatically begin to process the data. The initial input will continue to be valid for subsequent analyses if the user elects not to change it at this point.

```
Specify:
    a - change actors
    f - change flow
    t - change time
    p - change all input parameters
```

4.0 OPERATING THE EARLY WARNING AND MONITORING SYSTEM (EWAMS)

Introduction

The purpose of this section is to illustrate and describe the operating procedures of the EWAMS. This section should provide the user with a complete and detailed understanding of the entire system and its operation.

The operating instructions are described through the use of trhee examples, each selected to highlight specific components and options of the early warning system. Also, the examples have been chosed to illustrate how the information retrieval, monitoring, and warning capabilities of the system can be used to maximum advantage.

4.1 Example 1: Initial Input and Plots

The first example focuses on Soviet Union-East European political relations during the year 1968. During the month of August the Soviet Union and other Warsaw Pact forces, excluding Rumania, invaded Czechoslovakia.

Two components of the system receive exclusive attention in this example: the initial input component, which allows the user to specify the important input information, and the plots component. The latter serves to illustrate how the graphic capabilities of the EWAMS might be used to both monitor political relations and warn the user of impending crises.

1. After turning the power on and executing the log-in procedures, the user responds to the system prompt by typing in 'crisis' and pressing RETURN.*

% crisis

2. The display, at right, introduces the user to the Early Warning and Monitoring System (EWAMS). Instructions for activating the system are also provided.

********** EARLY WARNING AND MONITORING SYSTEM **********

The Early Warning and Monitoring System was originally developed for the Defense Advanced Research Projects Agency's Cybernetics Technology Office (ARPA/CTO) by Decisions and Designs, Incorporated (DDI); current development is being performed by the International Public Policy Research Corporation (IPPRC).

This version of the system shows how a computer-based warning system comprised of quantitative political indicators might be used by intelligence analysts in "real-time" to monitor international affairs and forecast international crises. The analyst can use the system to track single countries, country-pairs, JCS regions, regions of his own creation, or the entire international system. The system includes data from 1966 to the present so that the analyst can do historical analyses if he so desires.

Future versions of the system will add quantitative military and economic indicators to the political ones to give the analyst a multi-track indicator system for early warning and monitoring.

****

Please press RETURN to activate the system:

3. The user chooses to select both countries and regions for his first analysis.

*** EARLY WARNING AND MONITORING SYSTEM ACTIVATED ***

Are your actors:
1. Countries
2. JCS regions
3. Both 3

4. Nine regional options are displayed on the screen. The user decides to get a listing of the actors within the Eastern European Region, the fourth one.

*** REGIONAL OPTIONS ***

JCS REGIONS

1. North America (NAM)
2. Central and South America (CSA)
3. Western Europe--Mediterannean Atlantic (WEM)
4. Eastern Europe--Soviet Union (ESU)
5. Middle East and North Africa (MEA)
6. East Asia and Pacific (EAP)
7. South Asia and Sub-Saharan Africa (SAS)
8. World (WOR)
9. Special Purpose Region (SPR)

Do you want a list of actors in a region(y/n)? y
Enter region number: 4

*Unless indicated differently, all user responses are underlined. Also, even though it is not displayed, all user responses are executed by pressing the RETURN key.

5. The system provides the user with a listing of the countries and groups within the Eastern European Region. After reviewing the list of actors he decides not to examine another one.

```
********** 4. EASTERN EUROPE - SOVIET UNION **********

Albania (ALB)                          Hungary (HUN)
Berlin/East (EBE)                      Poland (POL)
Bulgaria (BUL)                         Rumania (RUM)
Czechoslovakia (CZE)                   USSR (USR)
Germany/Democratic Republic (GME)      Yugoslavia (YUG)

Warsaw Pact (WAR)

**************************************************

Do you want a list of actors in another region(y/n)? n
```

6. Once again the user has the opportunity to examine the regional options. Asked to select his actors, he chooses the Soviet Union and then the Eastern European region using the designated three-character codes.

```
                    *** REGIONAL OPTIONS ***

JCS REGIONS

1.  North America (NAM)
2.  Central and South America (CSA)
3.  Western Europe--Mediterannean Atlantic (WEM)
4.  Eastern Europe--Soviet Union (ESU)
5.  Middle East and North Africa (MEA)
6.  East Asia and Pacific (EAP)
7.  South Asia and Sub-Saharan Africa (SAS)
8.  World (WOP)
9.  Special Purpose Region (SPR)

Select a country and a region(usa,mea): usr,esu

Specify activity flow:
    0. one way (usr >>> esu)
    1. one way (usr <<< esu)
    2. two way (usr <-> esu)  2

Select time increment:
    1. monthly
    2. quarterly
    3. yearly                 1

Set time parameters(7501-7712): 6801-6812
```

Having chosen to examine the political interactions between the Soviet Union and Eastern Europe the user specifies the activity flow. The selection of a two way flow allows the user to examine all political interactions exchanged between these two actors.

Next, he is asked to enter the time increment to be used in the analysis. A monthly time interval is chosen so events will be grouped into monthly time periods.

He now enters the last input information. The user has decided to examine all political events exchanged between January 1968 and December 1968.

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7. The system goes to processing. During this time the system searches the database for all political event/interactions exchanged between the Soviet Union and the actors of Eastern Europe during the year 1968.

```
P R O C E S S I N G
```

8. The system indicates the processing has been completed. A total of 297 political events were exchanged between the Soviet Union and Eastern Europe during 1968.

Since the user has chosen to analyze the interactions at monthly time intervals he is given the option of examining the probabilistic forecasts. He decides to execute this option.

P R O C E S S I N G

C O M P L E T E D

Number of events found: 297

Do you desire 30 day probablistic forecasts(y/n): y

9. A display of the monthly probabilities of a crisis occurring between the Soviet Union and Eastern Europe. He presses RETURN to proceed.

Monthly Probability
Jan, 1968 - Dec, 1968

*** usr <<<>>> esu ***

Date	Probability
Jan 68	.10
Feb 68	.18
Mar 68	.23
Apr 68	.48
May 68	.65
Jun 68	.23
Jul 68	.80
Aug 68	.65
Sep 68	.23
Oct 68	.18
Nov 68	.18
Dec 68	.10

Press RETURN to continue:

10. This display allows the user to choose one of the primary options in the system. The user selects the plot option which will allow him to examine graphical displays of the political indicators.

SYSTEM OPTIONS :

tables	-	(tabular output)
plots	-	(graphical output)
text	-	(textual output)
qcsl	-	(change input parameters)
end	-	(terminate execution)

Any of these commands typed after the "%" will cause execution of the chosen function.

% plots

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11. What are the political indicators? The political indicator menu describes five political indicators--total, cooperative and conflictual activity as well as tension and uncertainty levels. These five indicators are treated from two different but related perspectives. First, using the raw data, the user can receive readings on each indicator at specified time intervals. Second, with the z-scores, the user can receive an indication of how unusual or different any given reading is compared to the actions taken by the actors in earlier time periods.

Choosing to receive a multiplot for his first graphical display, the user decides to examine the three activity indicators. Option '1' will give him three simultaneous line-plots of total, cooperative, and conflictual activity using the raw data.

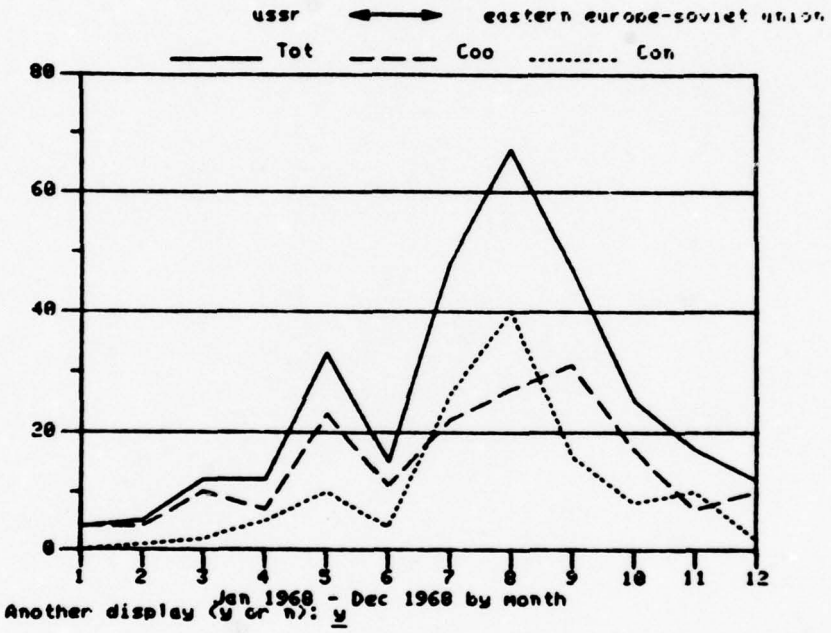
POLITICAL INDICATORS

	Total Activity	Coop Activity	Conflict Activity	Tension Level	Uncert Level
Raw Data	1	3	5	7	9
Z-Score	2	4	6	8	0

Do you want more than one plot per graph (y or n)y
You have these choices:
1 = graphs 1,3 + 5
2 = graphs 2,4 + 6
3 = graphs 7 + 9
4 = graphs 8 + 10
Please pick one :1

12. The display, at right, shows the multiplot of the three political indicators. Both conflict and total increase substantially several months prior to the invasion and reach their peak during the crisis month of August.

After examining the multiplot the user presses RETURN and the system responds with the next question. He decides to request another graph.



13. Once again the user gets the opportunity to review the political indicators menu. This time he decides not to examine a multiplot display. Instead, he chooses to examine two bar-charts for the cooperation and conflict indicators. He also elects to receive plots of the crisis probabilities associated with each of these indicators.

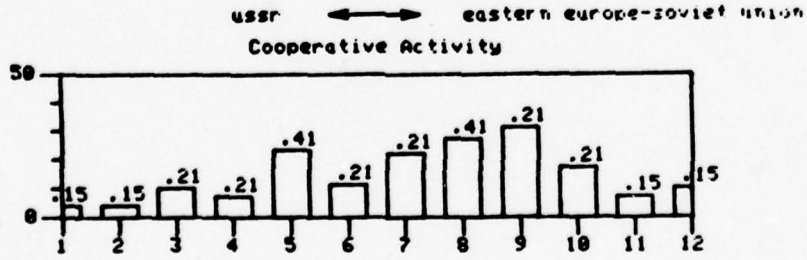
POLITICAL INDICATORS

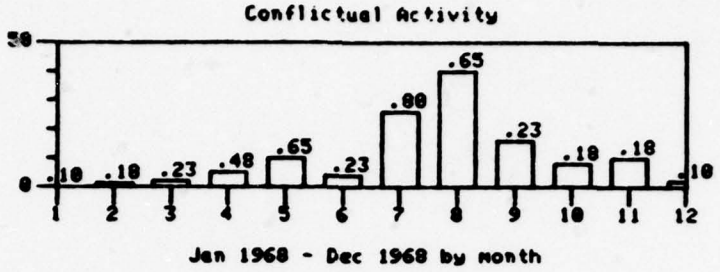
	Total Activity	Coop Activity	Conflict Activity	Tension Level	Uncert Level
Raw Data	1	3	5	7	9
Z-Score	2	4	6	8	0

Do you want more than one plot per graph (y or n) n
Do you want graphs or bar-charts (g or b) b
How many charts do you want (1-6) 2

Please type in the 2 chart numbers you would like displayed in the form (1,2,3 ... 6) 3,5
Do you want probabilities (y or n) y

14. This display presents the bar-charts and monthly crisis probabilities. The user chooses to look at more graphs.





15. This time he decides to examine six graphs or line plots for both raw data and z-scores. This will allow the user to make comparisons across the conflict, tension, and uncertainty indicators, thus giving him a comprehensive perspective on the developing crisis.

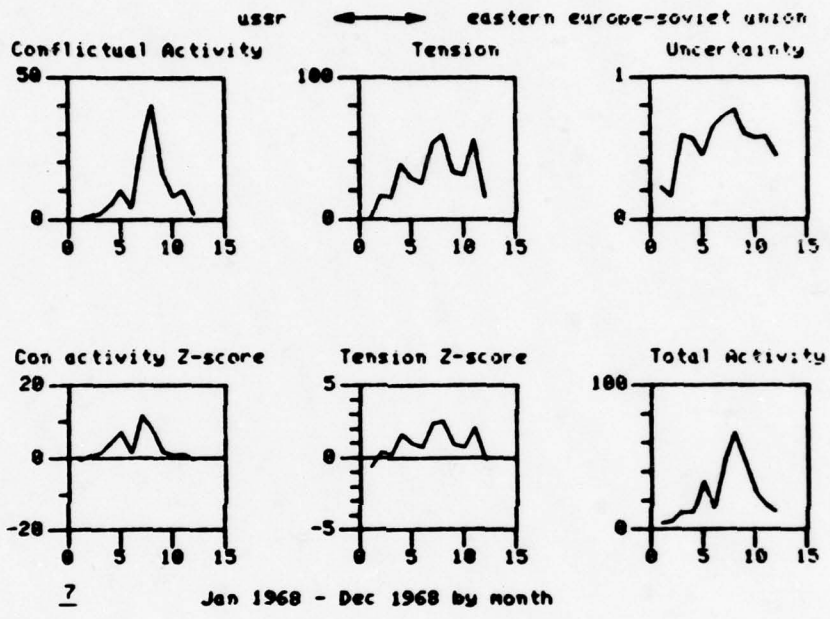
POLITICAL INDICATORS

	Total Activity	Coop Activity	Conflict Activity	Tension Level	Uncert Level
Raw Data	1	3	5	7	9
Z-Score	2	4	6	8	0

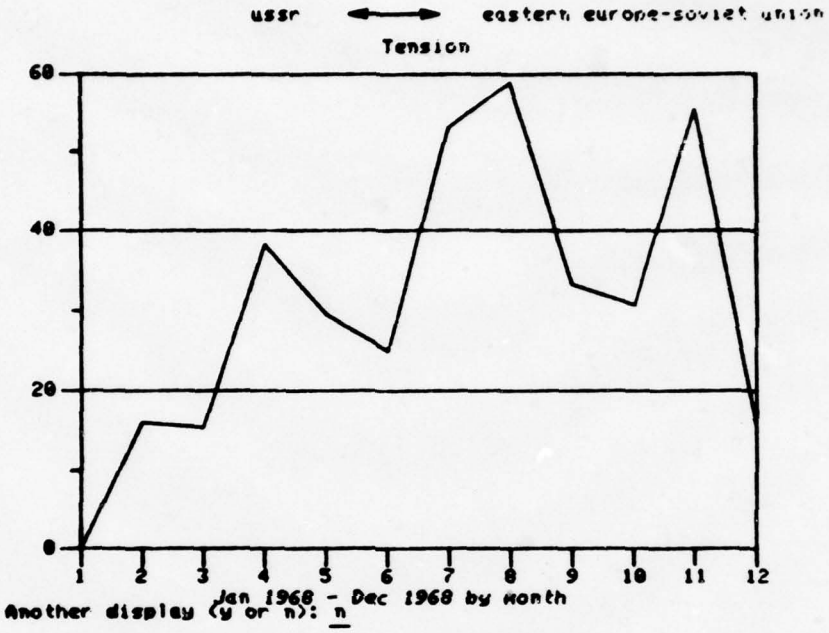
Do you want more than one plot per graph (y or n)n
Do you want graphs or bar-charts (g or b) g
How many graphs do you want (1-6) 6

Please type in the 6 graph numbers you would like displayed in the form (1,2,3 ... 6) 5,6,7,8,9,10

16. The line-plots for the three indicators using both raw data and z-scores. Noting that there is a great deal of similarity in the patterns, he decides to "blow up" the tension plot. The increased magnification is achieved by entering the number '7' which is the menu number for the tension indicator.



17. The blow up of the tension plot allows the user to examine the fluctuations in greater detail. He decides not to receive another graphic display.



Another display (y or n): n

18. Having terminated his graphic analysis of the political indicators, the user decides to change some of his input information in preparation for a new analysis.

SYSTEM OPTIONS :

tables	-	(tabular output)
plots	-	(graphical output)
text	-	(textual output)
qcsi	-	(change input parameters)
end	-	(terminate execution)

Any of these commands typed after the "%" will cause execution of the chosen function.

% qcsi

4.2 Example 2: QCS1 and Tables

The second example focuses on United States-Soviet Union political relations during the period January 1975-June 1978. Specifically, the analysis examines only those political events initiated by the Soviet Union and targeted at the United States.

This second example also focuses on two different components of the EWAMS. First, attention is devoted to the QCS1 component which allows the user to change initial input information such as actors and flow. Second, the analysis numerical component of the EWAMS.

1. The QCS1 system option allows the user to *change actors, flow, time, or all parameters.* Prior to making this decision the user has a chance to review the current status of his input parameters. Here, for example, the user decides to carry out a completely new analysis and elects to change all current input information.

2. In this analysis the user chooses to select only countries as his two actors. By entering the appropriate three-character country codes, he chooses the United States and the Soviet Union.

   This time the user chooses to examine a one way flow of events. He chooses option '1' which allows him to look at only those political events initiated by the Soviet Union and targeted at the United States. All other events exchanged between the two countries will be excluded from the analysis.

   The user also decides to change the time *increments and parameters.* By focusing on the quarterly time increments from January 1975 through June 1978 he takes more of a long-term perspective. However, he is still limited to 36 total time increments.

```
                    ******* QCS1 *******
Current input parameters:
    Actors: usr,esu
    Flow: two way (usr <-> esu)
    Time: 6801-6812 by month

Specify:
    a - change actors
    f - change flow
    t - change time
    p - change all input parameters  p


  *** EARLY WARNING AND MONITORING SYSTEM ACTIVATED ***


Are your actors:
    1. Countries
    2. JCS regions
    3. Both          1

Please select two countries(usa,usr):  usa,usr

Specify activity flow:
    0. one way (usa >>> usr)
    1. one way (usa <<< usr)
    2. two way (usa <-> usr)  1

Select time increment:
    1. monthly
    2. quarterly
    3. yearly                 2

Set time parameters(7501-7712):  7501-7806
```

3. The system goes to processing after having received all the necessary input information.

4. The system indicates there were 465 political events initiated by the Soviet Union and directed at the United States during this time period. RETURN is pressed in order to continue.

5. Having returned to the primary menu display the user elects to carry out a numerical, tabular analysis of United States-Soviet Union political relations.

6. The first table displayed presents the user with the numerical readings on three indicators at quarterly time increments. The three indicators of political activity are all designed to measure the volume of actions exchanged between actors.

   The first column indicates the time period under consideration which, in this case, is measured in quarters. Thus, the period labeled Jan 75 refers to the quarter beginning in January 1975 and ending in March. The second column refers to the number of events exchanged during the quarter for that particular indicator. The 16 for Jan 75 means there were 16 total events initiated by the Soviet Union and targeted at the United States during this quarter. The third column provides a numerical assessment of the unusualness of the quarterly reading compared to earlier ones. The closer the z-score is to zero the greater the similarity between the quarterly reading and previous readings taken on the indicator. A positive z-score indicates a higher than "normal" reading whereas a negative z-score means a lower than "normal" reading.

```
PROCESSING

                PROCESSING
                COMPLETED

  Number of events found:    465

Press RETURN to continue:

          SYSTEM OPTIONS :

    tables    -    (tabular output)
    plots     -    (graphical output)
    text      -    (textual output)
    acsl      -    (change input parameters)
    end       -    (terminate execution)

Any of these commands typed after the "%" will
cause execution of the chosen function.

% tables
```

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Quarterly Activity
Jan, 1975 - Jun, 1978

$$$ usr >>>>>> One-Way Flow >>>>>> usa $$$

Date	Total Activity number	Total Activity z-score	Cooperative Activity number	Cooperative Activity z-score	Conflictual Activity number	Conflictual Activity z-score
Jan 75	16	-1.21	10	-0.70	6	-1.15
Apr 75	21	-0.90	12	-0.55	9	-0.82
Jul 75	21	-0.88	15	-0.32	6	-1.10
Oct 75	28	-0.48	15	-0.32	13	-0.40
Jan 76	28	-0.47	12	-0.53	16	-0.11
Apr 76	33	-0.18	11	-0.60	22	0.47
Jul 76	16	-1.14	7	-0.89	9	-0.81
Oct 76	12	-1.34	9	-0.72	3	-1.38
Jan 77	48	0.72	19	0.04	29	1.20
Apr 77	62	1.49	25	0.49	37	1.94
Jul 77	51	0.83	20	0.72	23	0.53
Oct 77	31	-0.30	16	-0.06	13	-0.47
Jan 78	35	-0.07	9	-0.76	26	0.[illegible]
Apr 78	63	1.52	31	0.97	32	1.35

Press RETURN to continue:

7. Pressing the RETURN key produces a second tabular display, this time for the two indicators of tension and uncertainty. These two indicators are designed to tap a different dimension of political interactions--the variety of action exchanged. More specifically, tension measures the degree to which conflictual actions tend to dominate cooperative ones. It takes on values between 0 and 100 with the former indicating no tension and the latter maximum tension. The H-rel or uncertainty indicator assesses variation in the type of events exchanged. H-rel ranges in value between 0 and 1 with the former indicating maximum certainty and the latter maximum uncertainty.*

   The user wants to examine the types of political events in more depth so he decides to look at the event frequencies.

Quarterly Tension and Uncertainty
Jan, 1975 - Jun, 1978

$$$ usr >>>>>> One-Way Flow >>>>>> usa $$$

Date	Tension	Tension Z-score	H-rel	H-rel Z-score
Jan 75	35.2	-0.63	0.545	-0.48
Apr 75	40.6	-0.32	0.576	-0.15
Jul 75	27.2	-1.04	0.593	0.01
Oct 75	44.8	-0.07	0.621	0.31
Jan 76	55.1	0.49	0.540	-0.55
Apr 76	64.6	1.00	0.677	0.90
Jul 76	52.7	0.33	0.624	0.32
Oct 76	22.9	-1.33	0.580	-0.15
Jan 77	59.2	0.70	0.604	0.11
Apr 77	58.7	0.67	0.603	0.10
Jul 77	44.2	-0.15	0.596	0.02
Oct 77	40.6	-0.35	0.522	-0.80
Jan 78	72.2	1.45	0.565	-0.30
Apr 78	50.0	0.15	0.606	0.17

Do you want event frequencies(y/n)? y

*For further details on these indicators see S.J. Andriole, Progress Report on the Development of an Integrated Crisis Warning System (Technical Report 76-19, McLean, VA: Decisions and Designs, Inc., December, 1976); and J.A. Daly and T.R. Davies, Early Warning and Monitoring System: A Progress Report (Technical Report 78-17-39, McLean, VA: Decisions and Designs, Inc., July, 1978).

8. This display focuses on the cooperative events directed at the United States by the Soviet Union. There are ten cooperative event types: yield, comment, consult, approve, promise, grant, reward, agree, request, and propose. The numbers within the table refer to the total number of events exchanged for each quarter and each cooperative event type.

Quarterly Cooperative Activity
Jan, 1975 - Jun, 1978

*** usr >>>>>> One-Way Flow >>>>>> usa ***

Date	YLD	CMNT	CNSL	APPR	PRMS	GRNT	REWD	AGRE	RQST	PROP
Jan 75	0	3	5	0	0	0	0	2	0	0
Apr 75	0	3	4	0	0	0	0	4	1	0
Jul 75	0	3	5	2	0	0	0	5	0	0
Oct 75	0	6	4	0	0	0	0	4	1	0
Jan 76	0	7	3	0	0	0	0	1	0	1
Apr 76	1	3	2	0	0	0	0	4	1	0
Jul 76	0	2	1	0	0	0	1	1	2	0
Oct 76	0	4	2	0	0	1	0	1	1	0
Jan 77	0	7	9	1	0	0	0	1	0	1
Apr 77	1	11	8	0	1	2	0	2	0	0
Jul 77	0	12	11	2	1	0	0	1	1	0
Oct 77	0	9	7	1	0	0	0	0	0	1
Jan 78	0	3	3	0	0	0	0	1	1	1
Apr 78	0	13	9	0	0	1	0	4	1	3

Press RETURN to continue:

9. Again pressing RETURN the next table, to the right, focuses solely on the conflictual events directed at the United States by the Soviet Union. There are twelve conflictual event types: reject, accuse, protest, deny, demand, warn, threat, demonstrate, reduce, expel, seize, and force. The numbers within this table refer to the number of events for each event type. For example, the 24 in the accusation (acus) column means there were 24 accusations directed at the United States by the Soviet Union during the second quarter of 1978.

Quarterly Conflictual Activity
Jan. 1975 - Jun. 1978

*** usr >>>>>> One-Way Flow >>>>>> usa ***

Date	RJCT	ACUS	PROT	DENY	DMND	WARN	THRT	DEMO	RDUC	EXPL	SEIZ	FRCE
Jan 75	0	3	1	0	0	0	0	0	2	0	0	0
Apr 75	2	6	0	1	0	0	0	0	0	0	0	2
Jul 75	2	3	0	0	0	0	0	0	1	0	0	0
Oct 75	4	6	1	0	0	0	0	0	2	0	0	0
Jan 76	1	11	0	3	0	1	0	0	0	0	0	0
Apr 76	1	13	2	0	1	1	2	0	1	0	1	0
Jul 76	1	6	0	1	0	1	0	0	0	0	0	0
Oct 76	0	2	0	0	0	0	0	0	1	0	0	0
Jan 77	0	19	0	4	1	1	2	0	1	1	0	0
Apr 77	0	27	2	1	2	1	2	0	0	0	2	0
Jul 77	0	16	1	1	0	3	0	0	2	0	0	0
Oct 77	1	10	0	0	0	1	1	0	0	0	0	0
Jan 78	1	18	0	2	0	3	1	0	0	0	1	0
Apr 78	0	24	1	0	3	2	1	0	0	0	1	0

Press RETURN to continue:

10. Having fully executed the numerical, tabular options of the EWAMS the user decides to change some of his input information.

SYSTEM OPTIONS :

tables	-	(tabular output)
plots	-	(graphical output)
text	-	(textual output)
ecsi	-	(change input parameters)
end	-	(terminate execution)

Any of these commands typed after the "%" will cause execution of the chosen function.

% ecsi

4.3 Example 3: QCS1 and Text

The third, and last, example focuses on the political interactions between Rhodesia and a group of highly developed, industrialized Western countries. This group is comprised of the United States, West Germany, France, and the United Kingdom. The tim eperiod under consideration extends from January 1975 through June 1978.

Once again the analysis focuses on two components of the EWAMS. The QCS1 component is used to change part of the current input information from the previous example. The example also demonstrates the operation of the text component of the EWAMS which allows the user to retrieve and display textual information.

1. The QCS1 option allows the user to review the current status of the input parameters. The user decides to change only the current actors so he types in the appropriate character 'a'. Thus, the flow and time parameters will not be changed.

```
                              ******* QCS1 *******

Current input parameters:
    Actors: usa,usr
    Flow: one way (usa <<< usr)
    Time: 7501-7806 by quarter

Specify:
    a - change actors
    f - change flow
    t - change time
    p - change all input parameters a
```

2. The user chooses to examine the interactions between a country and a region.

```
*** EARLY WARNING AND MONITORING SYSTEM ACTIVATED ***

Are your actors:
    1. Countries
    2. JCS regions
    3. Both        3
```

3. A listing of the regional options is displayed. He decides to get a list of the actors in region nine, the Special Purpose Region (SPR).

```
                          *** REGIONAL OPTIONS ***

JCS REGIONS

1.  North America (NAM)
2.  Central and South America (CSA)
3.  Western Europe--Mediterannean Atlantic (WEM)
4.  Eastern Europe--Soviet Union (ESU)
5.  Middle East and North Africa (MEA)
6.  East Asia and Pacific (EAP)
7.  South Asia and Sub-Saharan Africa (SAS)
8.  World (WOR)
9.  Special Purpose Region (SPR)

Do you want a list of actors in a region(y/n)?y
Enter region number: 9
```


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4. The SPR is an option which allows the user to construct his own regional grouping of actors. He decides not to receive another regional listing.

```
#######  9. Special Purpose Region 1  #######

   The Special Purpose region option refers
   to a build your own region capability.

   To exercise this regional option specify
   SP1 if only one actor is a special purpose
   region (e.g. NAM,SP1).  Specify SP1 and SP2
   if both actors are special purpose regions
   (e.g. SP1,SP2)

##########################################

Do you want a list of actors in another region(y/n)? n
```

5. The user selects two actors. First is the country of Rhodesia and the second actor is the Special Purpose Region. Since he only needs one SPR he enters 'sp1'.

```
### REGIONAL OPTIONS ###

JCS REGIONS

1.  North America (NAM)
2.  Central and South America (CSA)
3.  Western Europe--Mediterannean Atlantic (WEM)
4.  Eastern Europe--Soviet Union (ESU)
5.  Middle East and North Africa (MEA)
6.  East Asia and Pacific (EAP)
7.  South Asia and Sub-Saharan Africa (SAS)
8.  World (WOR)
9.  Special Purpose Region (SPR)

Select a country and a region(usa,mea):  rho,sp1
```

6. Since this is the first time the user has built this particular region it does not already exist. Thus, he enters the four countries that will make up his new region.

```
#######  9. Special Purpose Region 1  #######

Does your region already exist(y/n)? n
Enter maximum of 20 actors for your region (enter end
   to discontinue region entry):

   1. usa
   2. unk
   3. frn
   4. gmu
   5. end
```

7. The system allows the user to review the actors within the region. He is satisfied with this composition and he decides not to add or delete any of the actors.

   The user plans to examine this particular group of countries again in the near future so he saves the region and gives it the name 'western'. The user could have used any label as long as it did not exceed twelve characters in length.

```
#######  9. Special Purpose Region 1  #######

      1. usa                          (usa)
      2. united kingdom               (unk)
      3. france                       (frn)
      4. germany/fed rep              (gmu)

##########################################

Do you wish to change any of these actors(y/n)?n
Do you want to save this region(y/n)? y
Enter name for this region: western
```

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8. Having received the new set of actors, which is the only input parameter the user changed, the system goes to processing. Since all other input parameters are still valid, the system searches for those political events initiated by any member of the Western group and targeted at Rhodesia for the period January 1975-June 1978 at quarterly time increments.

```
PROCESSING
```

9. Processing is completed and the system reports the total number of political events that fulfill the input parameter specifications.

```
PROCESSING
COMPLETED

Number of events found:    115

Press RETURN to continue:
```

10. The user chooses to exercise the text option.

```
SYSTEM OPTIONS :

tables    -    (tabular output)
plots     -    (graphical output)
text      -    (textual output)
qcsi      -    (change input parameters)
end       -    (terminate execution)

Any of these commands typed after the "%" will
cause execution of the chosen function.

% text
```

11. The text option allows the user to specify the type of political event. Here he nas chosen to examine the textual data for all events initiated by the Western group and targeted at Rhodesia.

    Since the user is interested in only the more recent exchanges he decides to focus on the August 1978-September 1978 time period.

```
********** TEXT **********

Event Types

Cooperative Events:
   01 Yield (YLD)              06 Grant (GRNT)
   02 Comment (CMNT)           07 Reward (REWD)
   03 Consult (CNSL)           08 Agree (AGRE)
   04 Approve (APPR)           09 Request (RQST)
   05 Promise (PRMS)           10 Propose (PROP)

Conflictual Events:
   11 Reject (RJCT)            17 Threat (THRT)
   12 Accuse (ACUS)            18 Demonstrate (DEMO)
   13 Protest (PROT)           19 Reduce (RDUC)
   14 Deny (DENY)              20 Expel (EXPL)
   15 Demand (DMND)            21 Seize (SEIZ)
   16 Warn (WARN)              22 Force (FRCE)

Please Specify Event Types:
   1. All cooperative events
   2. All conflictual events
   3. All events
   4. Combination              3

Specify dates: (e.g. 6601-6604) 7808-7809
```

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12. The system now executes and automatically displays the appropriate textual information.

```
date: 780818  actor:   2  event:  42  target: 552  arena:   0
    the usa administration welcomes rhodesia pm smith's support
    for an all-party conference on the settlement issue and
    believes that it is in the interests of rho pm smith and the
    black moderates rho

date: 780818  actor:   2  event:  23  target: 552  arena:   0
    the usa carter administration says it is in the interests
    of rhodesia pm smith and black moderates to
    meet for an all-party conference on the settlement issue
    rho

date: 780820  actor: 200  event:  25  target: 552  arena:   0
    united kingdom foreign secretary david owen says he thinks
    that an all-party conference on the rhodesia settlement
    will take place soon unk rho

date: 780827  actor: 200  event: 160  target: 552  arena:   0
    united kingdom foreign secretary owen declares
    there is a "very real" risk of rhodesia being plunged
    into civil war by the year's end unk rho

date: 7809 5  actor: 200  event:  23  target: 552  arena:   0
    the united kingdom govt and oil company authorities
    say that all leaks of illicit unk oil to the
    breakaway colony of rhodesia are firmly
    sealed unk rho

    Page full...press RETURN to continue
```

13. The user chooses to examine more textual data.*

```
date: 7809 9  actor: 200  event:  25  target: 552  arena:   0
    united kingdom foreign secretary david owen says
    rhodesia is under urgent review by top unk and
    usa officials rho

      Do you want to look at more text (Y/N):y
```

14. This time the user wants to examine the textual data for only the more severe types of political conflict. Here he has chosen a combination of conflict events comprised of types 15 through 22.

    He also decides to expand the time parameters. The new time frame covers the period from January 1977 to September 1978.

*See Appendix B for abbreviations which commonly appear in the textual data.

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```
**********  TEXT  **********

Event Types

Cooperative Events:
   01 Yield (YLD)              06 Grant (GRNT)
   02 Comment (CMNT)           07 Reward (REWD)
   03 Consult (CNSL)           08 Agree (AGRE)
   04 Approve (APPR)           09 Request (REQT)
   05 Promise (PRMS)           10 Propose (PROP)

Conflictual Events:
   11 Reject (RJCT)            17 Threat (THRT)
   12 Accuse (ACUS)            18 Demonstrate (DEMO)
   13 Protest (PROT)           19 Reduce (RDUC)
   14 Deny (DENY)              20 Expel (EXPL)
   15 Demand (DMND)            21 Seize (SEIZ)
   16 Warn (WARN)              22 Force (FRCE)

Please Specify Event Types:
   1. All cooperative events
   2. All conflictual events
   3. All events
   4. Combination              4

Enter event types: (e.g. 01,02,21..) 15,16,17,18,19,20.21,22

Specify dates: (e.g. 6601-6604) 7701-7009
```

15. In chronological sequence the system displays the textual data for the new specifications.

```
date: 770118  actor: 200  event: 160  target: 552  arena:   0
    unk diplomat ivor richard who is chairman of the geneva
    conference for establishing an interim govt in rhodesia
    that would lead to zimbabwe rule warns rhodesia pm smith
    that the collapse of the talks would be disastrous for rho

date: 770120  actor: 200  event: 160  target: 552  arena:   0
    unk diplomat richard, chairman of the stalled conference to
    estublish an interim govt in rho that would lead to zim rule,
    says that if rho pm smith rejects the latest proposal for an
    interim govt which includes a unk high commissioner heading
    a 9-person council, the situation will be grave

date: 770123  actor: 200  event: 160  target: 552  arena:   0
    unk diplomat ivor richard who is chairman of the adjourned
    conference to establish an interim govt in rho that would
    lead to zim rule warns that the guerrille war in rho will
    continue if rho pm smith tries to keep militant nationalists
    out of an interim govt

date: 770124  actor: 200  event: 160  target: 552  arena:   0
    following rho pm smith's announcement that he will seek
    an internal settlement between his govt and the rho black-
    majority based on the kissinger plan he accepted in september
    unk foreign secretary crosland warns rho that it
    faces "calamitous consequences"

   Page full...press RETURN to continue
```

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16. Many of the political events concern internal political developments within Rhodesia and the response of the Western countries to those developments.

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```
date: 770125  actor: 200  event: 160  target: 552  arena:   0
    in a report to the house of commons unk foreign secretary
    crosland voices fear of armed marxist intervention in rho
    after the collapse of negotiations to bring about zim rule

date: 770318  actor:   2  event: 192  target: 552  arena:   0
    usa prs carter signs legislation which will permit him
    to stop the usa importation of chrome from rhodesia
    thereby complying with uno economic sanctions rho

date: 7706 1  actor:   2  event: 160  target: 552  arena:   0
    the usa says that rhodesia's seizure of a town
    in mozambique while in pursuit of zimbabwe guerrillas
    could have "extremely serious consequences" for the
    region rho zim fre

date: 7709 1  actor: 200  event: 160  target: 552  arena:   0
    britain and the usa warn rhodesia that rejecting
    the plan for transferring power to zimbabwe will probably
    plunge the region into an economic and military
    disaster unk rho zim

date: 7709 1  actor:   2  event: 160  target: 552  arena:   0
    britain and the usa warn rhodesia that rejecting the plan for
    transferring power to zimbabwe will probably plunge the region
    into an economic and military disaster unk rho zim

    Page full...press RETURN to continue
```

17. He decides to stop his analysis of the textual data.

```
date: 780827  actor: 200  event: 160  target: 552  arena:   0
    united kingdom foreign secretary owen declares
    there is a "very real" risk of rhodesia being plunged
    into civil war by the year's end unk rho

    Do you want to look at more text (Y/N):n
```

18. Having returned to the primary menu of system options the user chooses to terminate execution of the EWAMS. This will allow him to return control to the operating computer system.

```
                SYSTEM OPTIONS :

      tables    -    (tabular output)
      plots     -    (graphical output)
      text      -    (textual output)
      qcsl      -    (change input parameters)
      end       -    (terminate execution)

Any of these commands typed after the "%" will
cause execution of the chosen function.


% end
```

APPENDIX A

ALPHABETICAL LISTING OF COUNTRY CODES

ALPHABETICAL LISTING OF COUNTRY CODES

700	AFG	Afghanistan
339	ALB	Albania
615	ALG	Algeria
232	AND	Andorra
561	ANG	Angola
160	ARG	Argentina
900	AUL	Australia
305	AUS	Austria
695	BAH	Bahrain
053	BAR	Barbados
765	BGD	Bangladesh
211	BEL	Belgium
266	EBE	Berlin/East
267	WBE	Berlin/West
760	BHU	Bhutan
476	BIA	Biafra
145	BOL	Bolivia
571	BOT	Botswana
140	BRA	Brazil
355	BUL	Bulgaria
775	BUR	Burma
516	BUI	Burundi
811	CAM	Cambodia
471	CAO	Cameroun
020	CAN	Canada
431	CPV	Cape Verde
482	CEN	Central Africa Rep.
780	CEY	Sri Lanka (Ceylon)
483	CHA	Chad
155	CHL	Chile
710	CHN	China, Peoples Rep.
713	CHT	China, Republic of
100	COL	Columbia
495	COM	Comoro Islands
484	CON	Congo Brazzaville
490	COP	Zaire (Congo-Kinshasa)
094	COS	Costa Rica
040	CUB	Cuba
352	CYP	Cyprus/Greek
353	CYT	Cyprus/Turkish
315	CZE	Czechoslovakia
434	DAH	Dahomey
390	DEN	Denmark
042	DOM	Dominican Rep.
130	ECU	Ecuador
092	ELS	El Salvador
440	GUE	Equitorial Guinea
531	ELF	Eritrean Liberation Front
530	ETH	Ethiopia
375	FIN	Finland
220	FRN	France
980	FIJ	Fiji
555	FRE	Frelimo-Mozambique Liberation Org.
481	GAB	Gabon
420	GAM	Gambia
265	GME	Germany/Dem. Rep.
255	GMW	Germany/Fed. Rep.
452	GHA	Ghana
350	GRC	Greece
090	GUA	Guatemala
438	GUI	Guinea
441	GBI	Guinea-Bissau
110	GUY	Guyana
041	HAI	Haiti
091	HON	Honduras
310	HUN	Hungary
720	HOK	Hong Kong
395	ICE	Iceland
750	IND	India
850	INS	Indonesia
630	IRN	Iran
645	IRQ	Iraq
205	IRE	Ireland
666	ISR	Israel
325	ITA	Italy
437	IVO	Ivory Coast
051	JAM	Jamaica
740	JAP	Japan
663	JOR	Jordan
501	KEN	Kenya
731	KON	Korea/North
732	KOS	Korea/South
641	KUR	Kurdistan
690	KUW	Kuwait
812	LAO	Laos
660	LEB	Lebanon
570	LES	Lesotho
450	LBR	Liberia
620	LBY	Libya
223	LIC	Liechtenstein
212	LUX	Luxemburg
721	MAC	Macao
580	MAG	Malagasy
553	MAW	Malawi
820	MAL	Malaysia
782	MAD	Maldive
432	MLI	Mali
338	MLT	Malta
435	MAU	Mauritania
590	MAR	Mauritius
070	MEX	Mexico
221	MOC	Monaco
712	MON	Mongolia
600	MOR	Morocco
698	MOM	Muscat and Oman
562	NMB	Namibia (Former South-West Africa)
921	NAU	Nauru
790	NEP	Nepal
210	NTH	Netherlands
920	NEW	New Zealand
093	NIC	Nicaragua
436	NIR	Niger
475	NIG	Nigeria
385	NOR	Norway
770	PAK	Pakistan
095	PAN	Panama
905	PAP	Papua New Guinea
150	PAR	Paraguay
135	PER	Peru
840	PHI	Philippines
290	POL	Poland
235	POR	Portugal
485	STV	Principee & Sao Tomee
696	QAT	Qatar
552	RHO	Rhodesia
360	RUM	Rumania
517	RWA	Rwanda
331	SAN	San Marino
670	SAU	Saudi Arabia
433	SEN	Senegal
451	SIE	Sierra Leone
830	SIN	Singapore
520	SOM	Somalia
560	SAF	South Africa
681	SYE	South Yemen
230	SPN	Spain
780	CEY	Sri Lanka (Ceylon)
625	SUD	Sudan
105	SUR	Surinam
572	SWA	Swaziland
380	SWD	Sweden
225	SWZ	Switzerland
652	SYR	Syria
510	TAZ	Tanzania
800	TAI	Thailand
861	TIB	Tibet
461	TOG	Togo
052	TRI	Trinidad-Tobago
616	TUN	Tunisia
640	TUR	Turkey
500	UGA	Uganda
365	USR	USSR
675	UAE	United Arab Emirates
651	UAR	UAR (Egypt)
200	UNK	United Kingdom
002	USA	USA
439	UPP	Upper Volta
165	URU	Uraguay
328	VAT	Vatican
101	VEN	Venezuela
816	VTN	Vietnam/North
817	VTS	Vietnam/South
990	WSM	Western Samoa
678	YEM	Yemen
681	SYE	Yeman/South
345	YUG	Yugoslavia
490	COP	Zaire (Congo-Kinshasa)
551	ZAM	Zambia
554	ZIM	Zimbabwe-Rhodesia Liberation Org.

NON-GOVERNMENTAL ACTORS

198	AFP	Alliance for Progress
699	ARL	Arab League
692	OAP	Organization of Arab Petroleum Exporting Countries
693	OPC	Organization of Petroleum Exporting Countries
397	EEC	EEC
398	EFT	EFTA
396	NAT	NATO
199	OAS	OAS
599	OAU	OAU
697	PLO	Palestinian Liberation Organization
992	SEA	SEATO
818	VCG	Vietcong and NLF
394	WAR	Warsaw Pact
399	UNO	Any Intl. Org. (UN)
999	MLG	Any Multilateral Grp.
999	NSC	Not Stated, Unidentified Target
813	LAP	Pathet Lao

APPENDIX B

COMMON TEXTUAL DATA ABBREVIATIONS

ABBREVIATIONS WHICH COMMONLY APPEAR IN THE TEXTUAL DATA

AMB	Ambassador
CMW	Commonwealth
DEL	Delegate
DOD	Department of Defense
DOS	Department of State
DM	Defense Minister
FM	Foreign Minister
GEN	General
GOVT	Government
PM	Prime Minister
PRM	Premier
PRS	President
SC	Security Council
S DEF	Secretary of Defense
SG	Secretary General
SST	Secretary of State
VPRS	Vice President

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